## S66-004-05-US

## <u>Claims</u>

What is claimed is:

	1.	A rotary cathode device, comprising:
2		a conducting member disposed within a rotary cathode for coupling electrical
3		current from a power supply to a brush assembly, the conducting member
1		being made of an electrically conductive material; and
5		an electromagnetic field shield disposed between the conducting member and an
3		outer surface of the rotary cathode.
	2.	A rotary cathode device of claim 1 wherein the conducting member comprises a
2		coolant conduit.
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l	3.	A rotary cathode device of claim 1 the electromagnetic field shield forms at least
2		part of a drive shaft portion of the rotary cathode.
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ı	4.	A rotary cathode device of claim 1 wherein the electromagnetic field shield
2		comprises electromagnetic field-permeable material.
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1	5.	A rotary cathode device of claim 1 further comprising a drive shaft portion of the
2		rotary cathode, the electromagnetic field shield being disposed between the
3		conducting member and the drive shaft portion.

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1	6.	A rotary cathode device of claim 5 wherein the drive shaft portion has a bore
2		passing there through such that the drive shaft portion includes an interior
3		surface adjacent the bore, the electromagnetic field shield being adjacent to at
4		least a portion of the interior surface of the drive shaft portion.
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1	7.	A rotary cathode device of claim 1 further comprising a drive shaft portion of the
2		rotary cathode which forms at least a portion of the outer surface of the rotary
3		cathode, the electromagnetic field shield being adjacent to at least a portion of an
4		outer surface of the drive shaft portion.
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1	8.	A high-power ion sputtering magnetron having a rotary cathode device of claim 1.
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1	9.	A rotary cathode device connectable to a power supply of electrical current, said
2		rotary cathode device comprising:
3		a coolant conduit disposed within the rotary cathode device made of an
4		electrically conductive material for connecting the electrical current from
5		the power supply to the rotary cathode; and
6		a drive shaft portion made of a ferrous material for absorbing the electromagnetic
7		field to reduce heat damage to parts adjacent to the coolant conduit that
8		are susceptible to inductive magnetic heating.
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1	10	Λ.	high power	ion	couttoring	magnatran	comprising:
1	IU.	М	mun-bower	1011	Spallema	magnetron,	COMBINISHIG.

a rotary cathode disposed upon the magnetron device, the rotary cathode 2 3 comprising a conducting member disposed within the rotary cathode for 4 coupling electrical current from a power supply to a brush assembly, the 5 conducting member being made of an electrically conductive material, the 6 rotary cathode further comprising an electromagnetic field shield disposed 7 between the conducting member and an outer surface of the rotary 8 cathode.

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11. A magnetron device of claim 10 wherein the conducting member comprises a coolant conduit.

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A magnetron device of claim 10 wherein the electromagnetic field shield forms at 12. least part of a drive shaft portion of the rotary cathode rotatably disposed upon the magnetron device.

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13. A magnetron device of claim 10 wherein the electromagnetic field shield 2 comprises electromagnetic field-permeable material.

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14. A magnetron device of claim 10 wherein the rotary cathode further comprises a drive shaft portion of the rotary cathode, the electromagnetic field shield being disposed between the conducting member and the drive shaft portion.

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15. A magnetron device of claim 14 wherein the rotary cathode drive shaft portion has a bore passing there through such that the drive shaft portion includes an interior surface adjacent the bore, the electromagnetic field shield being adjacent to at least a portion of the interior surface of the drive shaft portion.

16. A magnetron device of claim 10 wherein the rotary cathode further comprises a drive shaft portion of the rotary cathode which forms at least a portion of the outer surface of the rotary cathode, the electromagnetic field shield being adjacent to at least a portion of an outer surface of the drive shaft portion.

17. A high-power ion sputtering magnetron connectable to an electrical power supply, said magnetron device comprising:

a rotary cathode rotatably mounted upon the magnetron device, said rotary cathode comprising a conducting member disposed within the rotary cathode, said conducting member being made of an electrically conductive material for connecting the electrical current from the power supply to the rotary cathode; and

a drive shaft portion rotatably mounted to the magnetron device, said drive shaft portion being made of a ferrous material for absorbing the electromagnetic field to reduce heat damage to parts adjacent to the conducting member that are susceptible to inductive magnetic heating.